What is claimed is:

1. A method comprising:

storing a plurality of coefficient values within a plurality of instructions in an instruction memory;

retrieving the plurality of coefficient values from the instruction memory;

multiplying at least one of the plurality of coefficient values by a polynomial variable value to determine a runtime polynomial; and

determining a runtime polynomial value based on the runtime polynomial using instruction memory accesses.

2. A method as defined in claim 1, wherein the runtime polynomial is associated with an approximating polynomial of a *K*-th root family function.

3. A method as defined in claim 2, wherein the *K*-th root family function includes at least one of an inverse function, an inverse square root function and a square root function.

4. A method as defined in claim 1, further comprising determining an inverse square root approximation value based on the runtime polynomial.

5. A method as defined in claim 4, wherein determining the inverse square root approximation value includes performing a self-correcting process on an intermediate inverse square root approximation value.

6. A method as defined in claim 4, further comprising determining a square root approximation value based on the inverse-square root approximation value.

7. An apparatus comprising:

a processor system including an instruction memory;

instructions stored in the instruction memory; and

a plurality of coefficient values stored in the instruction memory, wherein the plurality of coefficient values are associated with a runtime polynomial, and wherein the instructions stored in the instruction memory enable the processor system to determine a K-th root family function approximation value based on the runtime polynomial.

8. An apparatus as defined in claim 7, wherein the runtime polynomial is associated with a runtime approximating polynomial of a K-th root family function.

9. An apparatus as defined in claim 7, wherein the instructions enable the processor system to determine the K-th root family function approximation value using only instruction memory accesses.

10. An apparatus as defined in claim 7, wherein the instructions enable the processor system to retrieve the plurality of coefficient values from the instruction memory.

11. An apparatus as defined in claim 7, wherein the instructions enable the processor system to determine at least one of an inverse function approximation value, an inverse square root approximation value and a square root approximation value based on the runtime polynomial.

12. An apparatus as defined in claim 11, wherein the instructions stored in the instruction memory enable the processor system to determine the inverse square root approximation value by performing a self-correcting process on an intermediate inverse square root approximation value.

13. An apparatus as defined in claim 11, wherein the instructions stored in the instruction memory enable the processor system to determine the inverse function approximation value by performing a self-correcting process on an intermediate inverse function approximation value.

14. A computer readable medium having instructions stored thereon that, when executed, cause a machine to:

store a plurality of coefficient values within an instruction in an instruction memory;

retrieve the plurality of coefficient values from the instruction memory;

multiply at least one of the plurality of coefficient values by a polynomial variable value to determine a runtime polynomial; and

determine a runtime polynomial value based on the runtime polynomial using instruction memory accesses.

15. A computer readable medium as defined in claim 14, wherein the runtime polynomial is associated with a runtime approximating polynomial of a K-th root family function.

16. A computer readable medium as defined in claim 14, wherein the runtime polynomial is associated with at least one of an inverse function, an inverse square root function and a square root function.

17. A computer readable medium as defined in claim 14 having instructions stored thereon that, when executed, cause the machine to determine a K-th root family function approximation value based on the runtime polynomial.

18. A method comprising:

storing at least one polynomial coefficient value in at least one instruction associated with an instruction memory;

retrieving the at least one polynomial coefficient value from the instruction memory; and

determining a runtime approximating polynomial value based on the at least one polynomial coefficient value using only instruction memory accesses.

19. A method as defined in claim 18, wherein determining the runtime approximating polynomial value includes retrieving the at least one polynomial coefficient value from the instruction memory and using at least one of a multiplication operation and a subtraction operation.

20. A method as defined in claim 18, further comprising determining a K-th root family function approximation value by determining the runtime approximating polynomial value based on the at least one polynomial coefficient value, a K-th root family function and a polynomial variable value.

21. A system comprising:

a processor;

a memory coupled to the processor;

instructions stored in the memory; and

at least one polynomial coefficient value stored in at least one of the instructions, wherein the at least one polynomial coefficient value is associated with a runtime approximating polynomial of a K-th root family function, and wherein the instructions enable the processor to calculate a K-th root family function approximation value based on the runtime approximating polynomial of the K-th root family function.

22. A system as defined in claim 21, wherein the instructions enable the processor to calculate the runtime approximating polynomial of the K-th root family function using the at least one polynomial coefficient value and a polynomial variable value.

23. A system as defined in claim 21, wherein the instructions enable the processor to calculate the runtime approximating polynomial of the *K*-th root family function by retrieving the at least one polynomial coefficient value from the at least one of the instructions and using at least one of a multiplication operation and a subtraction operation.

24. A computer readable medium having instructions stored thereon that, when executed, cause a machine to:

store at least one polynomial coefficient value in at least one instruction associated with an instruction memory;

retrieve the at least one polynomial coefficient value from the instruction memory; and

determine a runtime approximating polynomial value based on the at least one polynomial coefficient value using only instruction memory accesses.

25. A computer readable medium as defined in claim 24 having instructions stored thereon that, when executed, cause the machine to determine the runtime approximating polynomial by retrieving the at least one polynomial coefficient value from the instruction memory and using at least one of a multiplication operation and a subtraction operation.

26. A computer readable medium as defined in claim 24 having instructions stored thereon that, when executed, cause the machine to determine a K-th root family function approximation value by determining the runtime approximating polynomial value based on the at least one polynomial coefficient value, a K-th root family function and a polynomial variable value.

27. A method comprising:

storing at least one polynomial coefficient value in at least one instruction;

retrieving the at least one polynomial coefficient value from the at least one instruction;

determining a runtime approximating polynomial of at least one of a transcendental function and an algebraic function based on the at least one polynomial coefficient value and a polynomial variable value; and

determining a function approximation value based on the runtime approximating polynomial using only instruction memory accesses.

28. A method as defined in claim 27, wherein determining the runtime approximating polynomial of the at least one of a transcendental function and an algebraic function includes retrieving the at least one polynomial coefficient value from the at least one instruction and using at least one of a multiplication operation and a subtraction operation.

29. A method as defined in claim 27, wherein determining the function approximation value includes determining an intermediate function approximation value based on the at least one polynomial coefficient value.

30. A system comprising:

a processor system;

a memory coupled to the processor system;

instructions stored in the memory; and

at least one polynomial coefficient value stored in at least one of the instructions, wherein the at least one polynomial coefficient value is associated with a runtime approximating polynomial of at least one of a transcendental function and an algebraic function and wherein the instructions enable the processor system to determine a function approximation value based on the runtime approximating polynomial of the at least one of a transcendental function and an algebraic function.

31. A system as defined in claim 30, wherein the instructions enable the processor system to calculate the runtime approximating polynomial of the at least one of a transcendental and algebraic function using a polynomial variable value and the at least one polynomial coefficient.

32. A system as defined in claim 30, wherein the instructions enable the processor system to calculate the runtime approximating polynomial of the at least one of a transcendental function and an algebraic function by retrieving the at least one polynomial coefficient value from the at least one of the instructions and using at least one of a multiplication operation and a subtraction operation.

33. A system as defined in claim 30, wherein the instructions enable the processor system to calculate an intermediate function approximation value using the at least one polynomial coefficient.

34. A system as defined in claim 33, wherein the instructions enable the processor system to calculate the function approximation value by performing a self-correcting process on the intermediate function approximation value.

35. A computer readable medium having instructions stored thereon that, when executed, cause a machine to:

store at least one polynomial coefficient value in at least one instruction;

retrieve the at least one polynomial coefficient value from the at least one instruction;

determine a runtime approximating polynomial of at least one of a transcendental function and an algebraic function based on the at least one polynomial coefficient value and a polynomial variable value; and

determine a function approximation value based on the runtime approximating polynomial using only instruction memory accesses.

36. A computer readable medium as defined in claim 35 having instructions stored thereon that, when executed, cause the machine to determine the runtime approximating polynomial of the at least one of a transcendental function and an algebraic function by retrieving the at least one polynomial coefficient value from the at least one instruction and using at least one of a multiplication operation and a subtraction operation.

37. A computer readable medium as defined in claim 35 having instructions stored thereon that, when executed, cause the machine to determine the function approximation value by determining an intermediate function approximation value based on the at least one polynomial coefficient value.